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METHODOLOGICAL ISSUES

GUIDELINES ON REPORTING AND REVIEW OF GREENHOUSE GAS INVENTORIES FROM PARTIES INCLUDED IN ANNEX I TO THE CONVENTION (IMPLEMENTING DECISIONS 3/CP.5 AND 6/CP.5)

Report of an expert meeting to assess experiences in the use of the UNFCCC reporting and review guidelines

Note by the secretariat

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I. INTRODUCTION

A. Mandate

1. At its fifteenth session, the Subsidiary Body for Scientific and Technological Advice (SBSTA) welcomed the organization of an expert meeting by the secretariat, to be held from 4 to 6 December 2001 in Bonn, on methodological and operational issues relating to the use of:

(a) The guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories (hereinafter referred to as the "reporting guidelines"); and

(b) The UNFCCC guidelines for the technical review of greenhouse gas (GHG) inventories from Parties included in Annex I to the Convention (hereinafter referred to as the "review guidelines").

2. The SBSTA requested the secretariat to prepare a report of the expert meeting for consideration at its sixteenth session (see document FCCC/SBSTA/2001/8, paragraph 15 (b)).

3. The purpose of the expert meeting was to advance the methodological work relating to the revision of the UNFCCC reporting and review guidelines. The participants at the expert meeting were to assess the experiences of Parties, review experts and the secretariat in the use of these guidelines during the trial period.¹ In accordance with decisions 3/CP.5, 6/CP.5 and 34/CP.7 (FCCC/CP/1999/7 and FCCC/CP/2001/13/Add.4) the Conference of the Parties (COP) will consider the revision of the UNFCCC reporting and review guidelines at its eighth session.

B. Scope of this note

4. This report is prepared in response to the mandate mentioned in paragraph 2 above. This report also includes three addenda:

(a) FCCC/SBSTA/2002/2/Add.1: Proposal for revision of the UNFCCC guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention;

(b) FCCC/SBSTA/2002/2/Add.2: Proposal for revision of the UNFCCC guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: Reporting guidelines on annual inventories;

(c) FCCC/SBSTA/2002/3/Add.3: Proposal for revision of the UNFCCC guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: Reporting guidelines on annual inventories. Annex: Tables of the common reporting format.

5. These addenda contain draft revised review and reporting guidelines, including draft revised tables of the common reporting format (CRF) prepared to facilitate the consideration of the revision of these guidelines by the subsidiary bodies at their sixteenth session. These draft revised guidelines, which include CRF tables, were prepared by the secretariat under the guidance of the Chairman of the SBSTA, following the approach for the continuation of work after the expert meeting endorsed by the participants thereof, as described in paragraph 17 below.

¹ Decisions 3/CP.5 and 6/CP.5 established a trial period for the use of the UNFCCC reporting and review guidelines covering the GHG inventories submitted in 2000 and 2001.

C. Possible action by the SBSTA

6. The SBSTA may wish to consider the information contained in this note when considering possible revisions of the reporting and review guidelines at its sixteenth session, with a view to recommending the adoption of revised reporting and review guidelines by the COP at its eighth session. The SBSTA may also wish to use this information to provide additional guidance to the secretariat in the work needed in order to implement decisions 3/CP.5, 6/CP.5 and 34/CP.7.

II. PROCEEDINGS

A. General issues

7. The expert meeting for assessing experiences in the use of the UNFCCC reporting and review guidelines was held in Bonn from 4 to 6 December 2001. The agenda of the expert meeting can be found at <http://unfccc.int/sessions/workshop/010412/index.html>.²

8. In total, 60 experts from 25 Parties included in Annex I to the Convention (Annex I Parties), including seven Annex I Parties with economies in transition, and 16 Parties not included in Annex I to the Convention (non-Annex I Parties),³ who had participated in the review activities organized during the trial period for the technical review guidelines, attended the expert meeting. In addition, one representative of the Intergovernmental Panel on Climate Change (IPCC) and two experts from international organizations, the International Energy Agency (IEA) and Organizacion Latinoamericana de Energia⁴ (OLADE), attended the expert meeting. The list of participants can be found on the secretariat web site.

9. The expert meeting was chaired by Mr. Halldor Thorgeirsson Chairman of the SBSTA, who officially opened the meeting. He was unable to be present for the entire expert meeting due to other obligations and he asked Ms. Helen Plume (New Zealand), who kindly accepted, to chair the expert meeting during his absence.

10. The secretariat made five presentations outlining the key technical and methodological issues addressed in the working paper prepared for the expert meeting. These presentations were followed by a round-table discussion, during which five national experts from Annex I Parties whose GHG inventories had been reviewed during the trial period presented their national perspectives and experiences relating to in-country, desk and centralized reviews. The presentations of Mr. Michael Gillenwater (United States of America), Mr. Jos Olivier (the Netherlands), Ms. Helen Plume (New Zealand), Ms. Penny Reyenga (Australia) and Mr. Klaus Radunsky (Austria) can be found on the secretariat web site.

B. Documentation

11. Background information on the experiences of Parties and the secretariat during the trial period is contained in the documents prepared for the fifteenth session of the subsidiary bodies, namely FCCC/SBSTA/2001/5 and Add.1, FCCC/SBI/2001/12, FCCC/SBSTA/2001/MISC.4 and FCCC/SBSTA/2001/MISC.5. In addition, the secretariat prepared five working papers based on

² All documents referenced in this note that have been posted on the secretariat web site can be found at this location.

³ Seven invited experts from six non-Annex I Parties were not able to participate in the expert meeting.

⁴ Latin American Energy Organization.

information contained in the documents mentioned above and the IPCC good practice guidance⁵ to facilitate discussions during the expert meeting. These working papers can be found on the secretariat web site.

C. Organization of the expert meeting

12. The deliberations at the expert meeting were conducted through three working groups. Two groups dealt with methodological and technical issues relating to the reporting guidelines and the review guidelines. A smaller group dealt with technical matters relating to the development of software tools for assisting Parties to report, and experts to review, GHG inventory data.

13. The working group on the reporting guidelines conducted its work under the co-chairmanship of Mr. Newton Paciornik (Brazil) and Ms. Dina Kruger (United States of America). The discussions focused on proposals for modifying the existing UNFCCC reporting guidelines on the basis of the experience gained during the trial period and the conclusions of the SBSTA on the IPCC good practice guidance (FCCC/SBSTA/2000/5, paragraph 44). The conclusions of this group are presented in section III of this report.

14. In order to address the possible modification of the sectoral tables of the CRF, three sectoral groups were formed (energy; industrial processes, solvent and other product use and waste; and agriculture)⁶ in which a limited number of experts with recognized experience in these sectors participated. The outcomes of the discussions of these groups are of a very technical and detailed character. Due to time limitations, these outcomes were not considered in detail by the working group on reporting guidelines and thus have not been included in this report. The Chairman invited participants at the expert meeting, as individuals or endorsed by their respective Parties, to provide their views on the outcomes of the deliberations of the sectoral groups. Both these outcomes and the views received can be found on the secretariat web site.

15. The working group on the review guidelines conducted its work under the co-chairmanship of Mr. William Kojo Agyemang-Bonsu (Ghana) and Mr. Jim Penman (United Kingdom of Great Britain and Northern Ireland). The discussions focused on proposals for modifying the existing UNFCCC review guidelines based on the experience gained during the trial period. The conclusions of this group are presented in section IV of this report.

16. The discussions of the group on software-related issues were facilitated by Mr. Tinus Pulles (the Netherlands). The group focused on technical matters relating to the development and improvement of the existing software tools, as well as on the need for new tools for the reporting and review of GHG inventory data. The conclusions of this group are presented in section V of this report.

D. Continuation of the work after the expert meeting

17. The Chairman of the SBSTA proposed the following approach, which was accepted by the participants at the expert meeting, for continuing the work on the reporting and review guidelines in preparation for the sixteenth session of the SBSTA:

(a) Request the secretariat to prepare revised draft reporting and review guidelines in order to facilitate the discussion of these matters during the sixteenth session of the SBSTA. These draft guidelines

⁵ In this document, the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* is referred to as the "IPCC good practice guidance".

⁶ Sectoral tables of land-use change and forestry were not considered by the experts, as explained in paragraph 40 of this report.

should be prepared under the guidance of the Chairman of the SBSTA assisted by the co-chairs of the working groups of the expert meeting, and by a limited number of experts with substantial inventory review experience who had acted as lead reviewers during the trial period and attended the expert meeting;

(b) The proposed draft revised guidelines should be based on the reporting and review guidelines adopted by the COP at its fifth session, the conclusions of the SBSTA on the IPCC good practice guidance agreed upon at its twelfth session, the experience gained during the trial period as described in the documents mentioned in paragraph 11 above, and the outcome of the expert meeting;

(c) The secretariat should publish these revised draft guidelines on the UNFCCC web site no later than 1 April 2002. Parties may wish to provide their views on these draft revised guidelines one month later for compilation by the secretariat into a miscellaneous document for the consideration of the SBSTA at its sixteenth session.

18. The Chairman stressed the importance of the subsidiary bodies completing their consideration of the revised reporting and review guidelines at their sixteenth session. This would facilitate the adoption of these guidelines by the COP at its eighth session and would allow reviews of all GHG inventories from Annex I Parties to be initiated in 2003, as mandated by decision 3/CP.5, using the revised reporting and review guidelines.

III. CONCLUSIONS ON GUIDELINES FOR REPORTING ANNUAL GREENHOUSE GAS INVENTORIES

A. General issues

1. Amount of information to be reported annually

19. The participants recommended that the unchanged data from previous submissions should not be resubmitted by Parties. The new software being developed by the secretariat must be designed to handle changes from previous submissions, clearly identify such changes, and to ensure that all data (both new and unchanged) must be available for review to ensure time-series consistency.

2. Recalculations

20. The participants agreed to expand the reporting requirements to make it possible to distinguish between recalculations due to methodological changes (changes in methods, emission factors and activity data gathering) and minor revisions/corrections to the data. To facilitate such reporting in CRF table 8(b): Recalculation – explanatory information, Parties should choose from a more complete list of possible reasons for changes, including *inter alia*: recalculations due to changes in methodology (including the way in which activity data are collected and emission factors are derived); error correction; reallocation among source categories; and major or minor statistical or editorial changes.

21. In addition, CRF table 8(b) should be further modified to present quantitative information on the magnitude of the changes, so that the significance of changes resulting from recalculations can be readily assessed. Two types of quantitative information were recommended: the absolute change of emissions for the individual gases, expressed in Gg of CO₂ equivalent, and the impact of the recalculation on the national total in percentage terms.

22. The participants recommended that the software continue to automatically calculate the table of changes to past data (CRF table 8(a): Recalculation – recalculated data). The software should be further developed to calculate the magnitude of changes indicated in paragraph 21 above.

3. Precursor gases

23. The participants recommended no changes to the current guidelines on this matter.

4. Redundancy in the CRF

24. The participants identified and discussed some redundancy in the current CRF, in particular CRF table Summary 1.B: short summary report for national GHG inventories and table 11: Checklist of reported inventory information. Deletion of table 11 from the CRF was recommended. The participants felt that CRF table Summary 1.B provided useful information to reviewers. It does not necessarily need to be provided as an input from Parties because it can be (and currently is) calculated from links to other tables in the CRF.

25. The participants requested the secretariat to revise CRF table 9: Completeness, to reduce redundant information. In addition, the sectoral groups were requested to elaborate suggestions for eliminating redundant information in the sectoral tables and sectoral background data tables of the CRF.

26. The participants took note of the information provided by the secretariat about new software that will be developed. They recommended that the secretariat consider approaches for reducing redundancy in reporting in the context of the development of this software.

B. National inventory report

27. The participants noted that the national inventory report (NIR) is the most important part of annual inventory reporting and that without an NIR it is not possible to have either transparency or a complete inventory review. The participants also noted that the NIR should contain the main explanatory information relating to the preparation of the inventory.

28. The participants noted that the NIRs currently provided by Parties lack a common structure. To help Parties report, and in order to support the review process, the participants recommended that a common and more comprehensive structure should be included in the guidelines. The structures of several NIRs reported by Parties were reviewed and a proposal for a common structure was developed and recommended by the participants. This structure is included in the annex to this report.

29. In preparing draft revised guidelines, the importance of the NIR should be enhanced by placing the NIR section before the CRF section. In addition, linkages between the NIR and the CRF should be improved to enable reviewers to assess both the detailed descriptions in the NIR and the more quantitative information in the CRF.

30. In preparing draft revised guidelines, a revision of paragraph 33 (c) - (i) of the current reporting guidelines (FCCC/CP/1999/7), describing the present content of the NIR, is necessary. The content of the proposed structure for the NIR, as described in the annex to this note, should be considered when revising paragraph 33 (c) - (i) in order to avoid repetition.

31. Paragraph 33 (b) of the current reporting guidelines, referring to calculation sheets, is unclear in its scope. The participants suggested that comprehensive information on methodologies used should be provided in the NIR and, therefore, paragraph 33 (b) should be deleted. However, the participants also noted that detailed information for reviews is important. They recommended that calculation sheets could be reconsidered in the future as Parties gain additional experience both with preparation of NIRs and the inventory review, if it is subsequently determined that Parties are not providing enough information for an effective review.

C. Matters relating to the CRF

32. The participants noted that the CRF was mainly designed to report quantitative inventory data and to facilitate comparisons of inventory data and trends among Parties. In addition, the participants discussed specific issues relating to the CRF tables.

1. Additional information and documentation boxes

33. The "documentation" boxes in the CRF should be retained, but their use should be minimized to the extent possible. The participants noted that detailed explanations should be provided in the NIR rather than in the CRF. They suggested that "documentation" boxes provide references to detailed explanations contained in the NIR.

34. Some information currently required in the "additional information" boxes could be better included in the NIR. Information provided in the "additional information" boxes that is useful for the review should, however, be maintained in the CRF. The extent to which the elements of additional information boxes should be retained in the CRF was discussed in the sectoral groups mentioned in paragraph 14 above.

2. Notation keys

35. The participants agreed that the notation key "0",⁷ which Parties have used when reporting emissions by sources or removals by sinks of greenhouse gases, should no longer be used as a notation key. Parties should either provide a number (even if very small) or report "NE",⁸ and that entries of "NE" should be explained in the completeness table of the CRF.

3. Reporting on methods and emission factors

36. Reporting on methods and emission factors used by Parties was discussed, together with possible modifications to the UNFCCC reporting guidelines, in order to reflect the IPCC good practice guidance.

37. The participants suggested modifying CRF table Summary 3 (Summary report for methods and emission factors used) in order to include information on what constitutes a key source and to identify whether the methods used to estimate GHG emissions correspond to those recommended in the decision trees of the IPCC good practice guidance.

4. Analysis of possible changes to sectoral tables

38. Due to the technical and detailed character of this analysis, this task was assigned to the sectoral group of experts with experience in the different IPCC sectors, as described in paragraph 14 above. The participants at the expert meeting recommended modifying the sectoral tables of the CRF, including making some changes to the shaded cells in the tables. The sectoral groups elaborated their proposed changes to the shaded cells, based on suggestions by Parties and the secretariat. The revised tables are included in the addendum 3 of this note (FCCC/SBSTA/2002/2/Add.3).

⁷ The notation key "0" was used to report estimates of emissions and removals which were considered to be less than one half of the unit being used to record the inventory table.

⁸ The notation key "NE" was used to report existing emissions by sources and removals by sinks of greenhouse gases which have not been estimated or when no estimate is reported because the source is considered very small.

D. Possible modifications to the UNFCCC reporting guidelines to reflect the IPCC good practice guidance

39. The secretariat prepared, for the expert meeting, working paper No. 6, "Possible modifications to the UNFCCC reporting guidelines to reflect the IPCC good practice guidance". The working paper contained suggestions on how to revise the reporting guidelines to incorporate the IPCC good practice guidance.⁹ The participants considered all the technical issues identified in the working paper. They recommended several specific changes to the reporting guidelines. These recommendations are represented in table 1.

Table 1: Recommendations on possible modifications to the UNFCCC reporting guidelines to reflect the IPCC good practice guidance¹⁰

General recommendations

Participants recommended replacing general references to "good practice" in the current reporting guidelines with more specific references to the IPCC good practice guidance already considered and endorsed by the SBSTA.

Recommendations paragraph by paragraph (*Paragraph numbers refer to the current UNFCCC reporting guidelines (FCCC/CP/1999/7).*)

Paragraph 3: "Principles and definitions"

The reference to "good practices" and the footnote should be deleted because they are out of date, as the IPCC good practice guidance has now been adopted.

Paragraph 4: "Principles and definitions"

A general reference to good practice guidance and its definitions could be included if necessary.

Paragraph 7: "Methods/Methodology"

A general reference to the application of good practice guidance should be included in the introductory text, but with a clear distinction between the IPCC Guidelines and the IPCC good practice guidance. Also a reference to IPCC good practice guidance should be included when Parties use national methodologies. The last part of the second sentence referring to how to "produce the most accurate data depending on data availability" should be deleted and a reference to the IPCC good practice guidance should be included instead.

Include a new paragraph 7bis: "Methods/Key source determination"

The participants recommended that a new paragraph should be included encouraging Parties to determine their national *key sources* for the base year and the latest reported inventory year as described in the IPCC good practice guidance. It should be done using the Tier 1 or Tier 2 both as level and trend assessment. For key sources, participants recommended that the guidelines should include encouragement to Parties to make every effort to use a recommended method for estimation of GHG emissions, in accordance with the corresponding decision trees in the IPCC good practice guidance.

⁹ See conclusions of the SBSTA on the IPCC good practice guidance in document FCCC/SBSTA/2000/5. See working paper No. 6 on the secretariat web site.

¹⁰ These recommendations reflect the points on which agreement was reached during the expert meeting. In some cases, they reflect textual changes to the current reporting guidelines and, in some cases, additional instructions to Parties that will be included in the text.

Paragraph 8: "Methods/Methodology"

The IPCC good practice guidance provides revised default activity data and emission factors. A reference to these should be included. The participants recommended that the guidelines should include encouragement to Parties to use national emission factors and activity data if they are developed in a manner consistent with the good practice guidance.

Paragraph 9: "Methods/Good practices"

This sub-heading and paragraph should be deleted as this concept is already covered in paragraph 7.

Paragraph 10: "Methods/Recalculations"

A reference to IPCC good practice guidance on the need for recalculations should be included.

Paragraph 11: "Methods/Recalculations"

The participants recommended that the guidelines should include a request to Parties to use the methods for recalculation provided in the IPCC good practice guidance when demonstrating time-series consistency. The last sentence of this paragraph in the current guidelines relating to the documentation of any good practices should be deleted.

Paragraph 12: "Methods/Uncertainties"

The participants recommended that the guidelines should include encouragement to Parties to make quantitative uncertainty estimates in accordance with the IPCC good practice guidance.

Include a new paragraph: "Methods/QA-QC"

The participants recommended that a sub-section on QA/QC, with reference to the IPCC good practice guidance, should be included. They also recommended that at least Tier 1 should be used for QC procedures, but Parties are encouraged to use Tier 2.

Paragraph 18: "Reporting/General guidance/Estimates of emissions and removals"

A reference to the IPCC good practice guidance method for distinguishing between emissions arising from use of fuel for domestic and international marine and aviation transportation should be included.

Paragraph 20: "Reporting/General guidance/Recalculations"

The participants recommended that the guidelines should include a request for explanation if Parties have not recalculated an estimate, where a recalculation is called for in the IPCC good practice guidance. They also recommended that if Parties do not use methods for recalculation described in the good practice guidance, Parties should justify this and give a full explanation of the methodology used. In addition, the participants recommended that Parties should report in the NIR the effect of the recalculation on both level and trend.

Paragraph 24: "Reporting/ General guidance/Uncertainties"

A reference to good practice should be included by deleting the word "indicated" in the first sentence and inserting "estimated and reported in accordance with good practice guidance". The last sentence of this paragraph relating to reporting of quantitative information on uncertainties should be deleted.

Include a new paragraph: "Reporting"/Key source"

The participants recommended that a new paragraph should be included requesting Parties to report the percentage contribution of *key source* categories to their national totals, both on emission level and trend, expressed in terms of CO₂ equivalent.

Paragraph 35: "Record keeping"

The words "expert judgement where appropriate" should be included in the first sentence.

Recommendations referring to common reporting format (CRF) tables

In addition to the proposed modifications to the current table Summary 3, as reflected in paragraph 37 above, the participants recommended replacing current CRF tables or including new tables as follows:

Replacement of table 7 – Overview table for national greenhouse gas inventories (IPCC Table 8A)

Current CRF table 7 should be replaced in order to include columns for reporting activity data uncertainty, emission factor uncertainty and the combined uncertainty, as well as a reference for expert judgement.

Inclusion of a new table to report on key sources

Include a table for reporting *key sources* in the CRF, both on emission level and trend assessment.

E. Land-use change and forestry (LUCF)

40. The participants recommended that the CRF tables (sectoral background tables 5A-D) related to LUCF should not be revised at this time because of the IPCC's ongoing work to develop good practice guidance for the LULUCF sector.

41. While waiting for the outcome of the ongoing work of the IPCC, the participants also recommended that Parties should be encouraged to provide more information about the methods used to estimate emissions and removals of greenhouse gases in the LUCF sector, as well as background data, in their NIR in order to improve the transparency of the reporting of these emissions and removals.

IV. CONCLUSIONS ON GUIDELINES FOR THE TECHNICAL REVIEW OF ANNUAL GREENHOUSE GAS INVENTORIES¹¹**A. Initial check and status reports**

42. The participants recommended that the approach for preparing status reports should not change. They also agreed that the publication of the status report should be completed within a total of seven weeks (from the date of receipt of the submission by the secretariat), including three weeks for comments from Parties on the status reports. This does not affect the timeline for the preparation of the synthesis and assessment report, since this process runs in parallel with the preparation of the status reports.

B. Synthesis and assessment

43. The participants emphasized the importance of synthesis and assessment (S&A) for the whole review process and agreed that the current practices should remain in place. They recommended that six experts should be involved for one week during phase II of the synthesis and assessment stage.

1. Timing of the different stages of the synthesis and assessment

44. The participants agreed on a timeline for the publication of the S&A report (16 weeks from 15 April, including three weeks for Parties to provide their comments). They also agreed that in order to achieve publication of the S&A report within 16 weeks, a cut-off date of six weeks (after 15 April) for submission of the CRF or of revised GHG inventory data should be established. This implies that

¹¹ In accordance with decision 6/CP.5, the technical review process of GHG inventories consists of three stages: initial check, synthesis and assessment and individual reviews. This section of the report provides conclusions and recommendations for each of these three stages.

submissions received after the cut-off date¹² would not be considered for the preparation of the S&A report, but the submissions provided before September could still be reviewed during the third stage of the review process.

45. The participants recommended that the secretariat should complete an assessment of the GHG inventories submitted after the cut-off date and should publish these assessments as separate documents (addenda to the S&A report), provided that this does not delay the review process for other Parties.

2. Structure and content of the synthesis and assessment report

46. The participants agreed that:

(a) The current structure of the S&A report should be maintained: section I containing a standardized set of data comparisons, and section II identifying potential issues to be clarified by the expert review teams during the individual reviews;

(b) The standardized set of data comparisons should be expanded with statistical determination of outliers and graphical representations;

(c) The S&A tables should be expanded to include any source that could be considered a key source in Annex I Parties using the common level of category disaggregation;

(d) The S&A report should only be published electronically on the web site of the secretariat.

47. The participants recommended that the secretariat should send the relevant section of the draft report to Parties for comments as soon as it is finalized.

C. Individual reviews¹³

1. Overall approach

48. In order to fulfil the provision of decision 6/CP.5 relating to the annual review of all GHG inventory submissions from Annex I Parties, the participants agreed that, starting in 2003, the secretariat should organize eight in-country reviews per year (i.e., all GHG inventories of Annex I Parties should be subject to an in-country review once every five years). The annual inventory submissions of the other Annex I Parties will be reviewed through desk and centralized reviews.¹⁴ The secretariat should organize an equal number of desk and centralized reviews, to the extent possible. The combination of these review activities is to be decided by the secretariat.

49. The participants noted the need for adequate communication among members of the expert review teams (ERTs) and between ERTs and the Parties under review, especially during desk and centralized reviews.

¹² Six weeks from the submission due-date implies by 27 May of each year.

¹³ During the trial period, three approaches for the individual reviews were tested: desk reviews (sending information to experts), centralized reviews (experts meeting in a single location) and in-country visits.

¹⁴ This implies that 32 GHG inventories from Annex I Parties will be reviewed on an annual basis either through a desk review or a centralized review.

50. The participants noted that centralized reviews offer opportunities for capacity building for new experts.¹⁵ They also indicated that the issues related to the participation of new experts in the centralized reviews may be influenced by the outcome of the discussions of the SBSTA on the training of experts.¹⁶

2. Number of inventories to be reviewed

51. During a centralized review up to six GHG inventories should be reviewed. During a desk review up to five GHG inventories should be reviewed.

3. Expert review teams (ERTs)

52. The participants agreed that:

- (a) Two lead reviewers (one from a non-Annex I Party and one from an Annex I Party) in each expert review team should be appointed, selected from among experienced inventory experts;
- (b) At least one expert should be appointed as a generalist in each expert review team;
- (c) The normal size of the ERTs for individual reviews should be established as:
 - (i) Six experts for in-country visits (one additional new expert could participate working together with experienced experts); and
 - (ii) Twelve experts for centralized reviews (a maximum of five new experts could participate in the teams working together with experienced experts);
 - (iii) Twelve experts for desk reviews (new experts will not participate in desk reviews);
- (d) The size of the ERTs should be expanded if the complexity of the inventory so requires;
- (e) Experts from relevant international organizations should be involved when appropriate.

4. Timing of the different stages of the individual reviews

53. The participants agreed that individual reviews should start in September each year. Each in-country review should be completed within 14 weeks and each desk or centralized review activity should be completed within 20 weeks.

5. Additional guidance for review experts

54. The participants agreed that:

- (a) The current preliminary guidance for review experts (see the secretariat web site) should be expanded and specific review guidance should be developed for each IPCC sector and for cross-cutting issues in the inventory. This guidance should be based on the reporting guidelines, the IPCC good practice guidance and on the experience gained during the trial period of the technical review process of GHG inventories;
- (b) This guidance should be further elaborated as an established procedure;

¹⁵ In this note, new expert refers to a national inventory expert who does not have experience of the technical review process of GHG inventories from Annex I Parties.

¹⁶ The COP, in its decision 23/CP.7, requested the SBSTA at its seventeenth session to consider the issue of the training of experts participating in expert review teams.

(c) Standard procedures/documentation should be developed by the secretariat to orient and prepare the members of ERTs performing desk reviews, centralized reviews and in-country reviews;

(d) Each sectoral expert should be prepared to "chair" working sessions covering the relevant sector(s) during in-country reviews.

6. Determination of key sources

55. The participants agreed that:

(a) Parties should report the *key sources* in accordance with the IPCC good practice guidance;

(b) The secretariat should continue to determine *key sources* on the basis of level and trend determination for all Parties using a common level of category disaggregation;

(c) The comparison of both *key source* determinations is important for the review of GHG inventories.

56. The participants noted the need for flexibility in determining *key sources*. The participants recommended that ERTs should identify the reason for any differences between the Party and the secretariat in determining *key sources* and that ERTs should identify missing sources.

7. Structure and content of the individual review reports

57. The participants agreed that:

(a) For in-country reviews the report should not exceed 25-30 pages in accordance with the outline of the preliminary guidance for review experts mentioned in paragraph 54 (a) above, with a 2-3 page summary;

(b) For desk and centralized reviews, the report should be shorter (up to 10 pages), focusing on particular strengths and problems and on an overall appraisal of the quality/reliability of the inventory, emission trends, actual emission factors and activity data and the degree of adherence to the reporting guidelines and IPCC good practice guidance;

(c) A new structure should be developed for each type of review report, including standardized tables whenever possible, to increase the efficiency of communication;

(d) Reports should be published solely on an electronic basis on the UNFCCC web site.

8. Communications between expert review teams and national experts during desk and centralized reviews

58. The participants agreed that communications should be through the lead reviewers and a contact person designated by the Party under review. Detailed enquiries can be pursued at an expert level, if a Party so agrees. The secretariat should notify Parties about up-coming desk and centralized reviews and ask the Parties to identify contact persons through which the enquiries could be directed.

9. Participation of review experts in the review process and identification of qualified review experts

59. The participants agreed that:

(a) National focal points should update the information about experts nominated to the UNFCCC roster of experts and should ensure that a minimum of two experts are nominated for the review of GHG inventories. In addition, they should nominate at least two additional experts for this purpose, if possible, and provide information on the practical experience of the candidates, especially in the preparation of national GHG inventories, and the review process;

(b) The secretariat should select one new expert for each in-country review and a maximum of five new experts for each centralized review;

(c) There is an annual need for at least 100 potentially available experts from Parties included in Annex II to the Convention (Annex II Parties) to be chosen from the UNFCCC roster of experts;

(d) The secretariat should communicate the needs for the review process (timing, number of experts from each Annex II Party) to the focal points of Annex II Parties on an annual basis at least three months in advance of the planned review activities, and should ask the national focal points to indicate the availability of their review experts for these activities.

10. Review of models

60. The participants noted that reviewing sophisticated models and country-specific methodologies for estimating emissions and removals of GHG is part of the technical review process, but such reviews can be a complex task for the ERTs. The ERTs should be encouraged to provide advice on how to examine the models/methods, for example, through:

(a) Peer review of the model via the scientific literature;

(b) Input/output analysis, for example, through consideration of implied emission factors or inversion;

(c) Model comparison and review activities (e.g., workshops) organized domestically or internationally by the Party or Parties themselves.

D. Other issues

1. Recommendations on reporting and software issues

Issues related to reporting

61. The participants recommended that:

(a) The percentage of *key source* emissions identified by Parties should be included in the NIR;

(b) The methods used to determine *key sources* should be reported in the NIR.

Software issues related to the review guidelines

62. The participants agreed that a data search software tool should be distributed on CD(s) to the experts prior to a review activity and should also be available for downloading from the UNFCCC web

site, bearing in mind the need for version control. Such a tool should include the full GHG inventory database which supports its use.

63. The participants agreed that access to the software tools developed for the review process should, at least in the initial stages, be limited to the members of the ERTs and Parties.

64. The participants noted that:

- (a) Data presented in graphical format constitute a useful tool for the review process;
- (b) Methods and tiers used for specific sectors as well as cross-references from the CRF tables to the NIR for all Parties should be made available to the review experts;
- (c) For comparison purposes, it would be useful to have a tool for obtaining the time-series and trends for implied emission factors, emissions, activity data and indices, e.g., emissions per GDP, human population figures as per capita, population of livestock, etc.;
- (d) It would be useful to assess which queries and tasks mentioned in the preliminary guidance for review experts could be facilitated through the use of the software tools;
- (e) The CRF software should provide cross-references to the location of the methodological description in the NIR.

2. Recommendations for the revision of the review guidelines

65. The participants felt that some elements in the draft guidelines for review under Article 8 of the Kyoto Protocol could be relevant to the further development of the review guidelines under the Convention. They suggested that these elements could be drawn upon, as appropriate, bearing in mind the differences between the review processes under the Kyoto Protocol and the Convention.

V. CONCLUSIONS ON SOFTWARE-RELATED ISSUES

Key issues addressed at the expert meeting

1. GHG reporting and review-related tasks, information and data flow

66. The group considered the various tasks of the Parties and the secretariat throughout the reporting and review phases. It discussed requirements, tasks, related information, products, dependencies and data flows. It also assessed the existing software support for these tasks and the need for new/revised software related support. The discussions delineated the various tasks and sub-tasks of the reporting and review phases and, thus, the possible functions of software-related support for both phases.

2. Reporting software needs

67. With regard to the reporting software, which was seen as a priority by the group, it was felt that it was essential to revise it and move from a spreadsheet to a database platform software. The group conducted detailed discussions on the priorities for developing and sequencing the inputs needed to develop such software. The major objectives of the software should be:

- (a) To incorporate the changes to the guidelines;
- (b) To ease and simplify reporting (data entry, bulk import);

- (c) To facilitate the processing time and reduce inconsistencies/errors.

68. With these objectives in mind it was agreed that the possible functions of the software would need to be prioritized by the secretariat to ensure the major objectives could be met.

3. Review software needs

69. The group had a limited discussion on the existing tools for the review process and the need for additional support during the various review stages. The group identified the following basic priorities and needs for the review process:

- (a) The automated production of standard reports for Parties and ERTs:
 - (i) Synthesis and assessment (section I: tables);
 - (ii) Status reports (initial checks) ;
- (b) A data search tool for reviews, and consideration of its provision for external review activities (desk reviews, in-country visits);
- (c) The production of recalculation comparisons and *key source* analysis for support to the ERTs.

70. In addition, the group identified the following future needs:

- (a) Development of more sophisticated data search and presentation software (graphical, customized tables);
- (b) Inclusions of external statistics in the data management system and provision of related analysis with such statistics.

4. Timeline for development of software

71. Following the discussions on the reporting and review software, and with input from the working groups on reporting and review, the group discussed the overall priorities and possible time frames for implementation. It was felt that the immediate priority would need to be the development of revised reporting software and continued support of the existing data search and analysis tools for the ERTs. In this regard, participants considered it vital that the software be available when the Parties begin to report according to the revised reporting guidelines. The group suggested that advanced functions in any new reporting software and additional software tools for the review process should be considered as a second priority.

72. Finally, a number of participants voiced their interests in providing assistance to the secretariat in testing and providing feedback on the software tools to be developed.

Annex**National Inventory Report (proposed table of contents as discussed in the expert meeting)****Executive summary**

For example, aggregate results using global warming potentials (GWPs)

- For example: 1990-1999 using GWPs
- Synthesis analysis by sources
- Synthesis analysis by gas

Chapter 1 Introduction

Institutional arrangements and framework for inventory preparation

Chapter 2 Inventory preparation process

- Brief description of the process: data collection and process - data storage, etc. (or include in Chapter 1)
- QA/QC process, including verification and treatment of confidentiality issues where relevant
- Actions undertaken in response to the issues raised by the UNFCCC review
- Future improvement of the inventory process (e.g., methodological changes, etc.)

Chapter 3 Trends in total greenhouse gas emissions

- Aggregate results using GWP
- Synthesis analysis by sources
- Synthesis analysis by gas

Chapter 4 General issues4.1 General methodological overview

Short section with emphasis on

- Methodologies used (e.g., IPCC, CORINAIR, etc.)
- Tier approaches generally used
- Include Summary Table 3
- Any major deviation from standard methodology

4.2 Recalculations (or separate chapter)

- Implications for emissions
- Implications for trends
- Justifications

4.3 Source allocations and completeness

- Feedstocks, country-specific allocations
- Completeness and sources reported elsewhere

4.4: General uncertainty assessments and key sources analysis

- General uncertainty assessments
- Key sources analysis

Chapter 5 Inventory presentation

5.1 Energy

5.1.1 Trends

- subcategories analysis following CRF tables (as cross-referenced to CRF)

5.1.2 Key Sources

5.1.2.1 Key source 1 (cross reference with CRF, for example, number of underground mines)

- Methodological issues (choice of methods/AD/EF, assumptions, parameters and conventions underlying the emission and removal estimates, as well as the rationale for their selection, any specific methodological issues - remind to refer to the appropriate document and reference notes)
- Uncertainties
- Source-specific verification, if applicable
- Source-specific QA/QC, if applicable
- Source-specific recalculations (including time-series consistency), if applicable

5.1.2.2 Key source 2

- See above section.

5.1.3 Non-key sources

5.1.3.1 Non-key source 1

- Methodological issues (choice of methods/AD/EF, assumptions and conventions underlying the emission and removal estimates, as well as the rationale for their selection, any specific methodological issues remind to refer to the appropriate document and reference notes)
- Uncertainties
- Source-specific verification, if applicable
- Source-specific QA/QC, if applicable
- Source-specific recalculations (including time-series consistency), if applicable

5.1.3.2 Non-key source 2

- See above section.

5.1.4 Comparison with CO₂ IPCC Reference Approach

5.1.5 Bunker fuels

5.1.6 Military or any other country-specific issue (N.B. sections 5.1.4-5.1.6. only in Energy sector)

5.2 Industrial Processes (sub-sections: similar to Energy sector)

5.3 Solvent use

5.4 Agriculture

5.5 LUCF

5.6 Waste

5.7 Other (if applicable)

Chapter 6 Emission trends of indirect gases and sulphur dioxide (SO₂)

References

Annexes

Annex 1 Selected CRF tables (to be determined)

- Only some tables are included here in print. The complete CRF tables for all years in electronic format are an integral part of the annual inventory submission to the UNFCCC.

Annex 2 Additional information to be considered as part of the NIR submission

- (e.g., uncertainty methodology, etc.) (where relevant)

Annex 3 Detailed methodological description (where relevant)

Annex 4 National energy balance

Annex 5 (any other relevant information - optional)

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